Assessing, Designing, and Implementing Interventions Targeting Children's Grammatical Language

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  – NIH NIDCD, R03 (1R03DC011365-01)
  – NIH NIDCD, R01 (R01 HD 074346)
  – Internal Funding from The University of Minnesota

• All of the families and children who have participated in our studies and others!

Acknowledgements

• Child Language Intervention Lab:
  – Katherine Bangert
  – Timothy Huang

• You for inviting me!
Conflict of Interest

• I have no financial or nonfinancial relationships to disclose.

Today's Agenda

- Introductions (10 min)
- Why Grammar? (30 min)
- Assessing Grammar (105 min)
- Goal Writing (30 min)
- Intervention (105 min)

Me...

- Education
- Research
- Teaching
You…

Population | Setting | Diversity | Grammar

More about today…

• Break as needed; 30 min pause for dinner

• Ask questions!

• Use social media: Twitter: @finestack; Instagram: Finestack

• Website: http://www.finestackclil.com/

Learner Outcomes

1. Learners will be able to identify five grammatical forms that children with language impairment commonly demonstrate weaknesses in mastering.

2. Learners will be able to describe three assessments that they can use to assess the grammatical skills of children with language impairment.

3. Learners will be able to identify three evidence-based techniques to treat grammatical weaknesses of children with language impairment.

4. And much, much more!
Today's Agenda

- Introductions (10 min)
- Why Grammar? (30 min)
- Assessing Grammar (105 min)
- Goal Writing (30 min)
- Intervention (105 min)

Why Grammar?

- One area of language that is particularly difficult for many children to master is grammatical language.
  - Specific Language Impairment/Developmental Language Disorder
  - Down Syndrome, Fragile X syndrome
  - Autism Spectrum Disorder

Typical Language Development

<table>
<thead>
<tr>
<th>Produce First Words</th>
<th>Begin Producing Morphemes</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 mo</td>
<td>24 mo</td>
</tr>
<tr>
<td>Combining Words</td>
<td>27-30 mo</td>
</tr>
</tbody>
</table>
Brown’s 14 Grammatical Morphemes (Brown, 1973)

<table>
<thead>
<tr>
<th>Stage</th>
<th>Morpheme</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>II</td>
<td>Present progressive -ing</td>
<td>Me playing.</td>
</tr>
<tr>
<td></td>
<td>Plural -s</td>
<td>That book.</td>
</tr>
<tr>
<td>II</td>
<td>Present progressive -ing</td>
<td>Cookie Monster in there.</td>
</tr>
<tr>
<td>III</td>
<td>On</td>
<td>Doggie on car.</td>
</tr>
<tr>
<td>III</td>
<td>Possessive ’s</td>
<td>Mommy’s shoes.</td>
</tr>
<tr>
<td>IV</td>
<td>Regular past</td>
<td>He walked.</td>
</tr>
<tr>
<td>IV</td>
<td>Regular 3rd person singular</td>
<td>She came.</td>
</tr>
<tr>
<td>IV</td>
<td>Articles a, the</td>
<td>She took.</td>
</tr>
<tr>
<td>IV</td>
<td>Contractible copula be</td>
<td>That’s a puppy.</td>
</tr>
<tr>
<td>V+</td>
<td>Contractible auxiliary be</td>
<td>They’re playing. I am coming.</td>
</tr>
<tr>
<td>V+</td>
<td>Uncontractible copula be</td>
<td>Whose house? I am.</td>
</tr>
<tr>
<td>V+</td>
<td>Irregular 3rd person singular</td>
<td>Who’s playing. I am.</td>
</tr>
<tr>
<td>V+</td>
<td>Irregular 3rd person singular</td>
<td>She has. He does.</td>
</tr>
</tbody>
</table>

Link Between Grammar and Reading

The Many Strands that are Woven into Skilled Reading

- Language Comprehension
- Grammaticality Judgment: Comprehensive Assessment of Spoken Language (Carrow-Woolfolk, 1999)

Link Between Grammar and Reading

2020 Colorado Academic Standards
(https://www.cde.state.co.us/apps/standards/6,2,18/6,1,18/6,3,18)

• Reading, Writing, and Communicating
  – Oral Expression and Listening
    • Preschool:
      – Participate in conversations of more than three exchanges with peers and adults.
      – Use language to express ideas and needs.
      – Use increasingly complex and varied vocabulary.
      – Understand the difference between a question and a statement.
      – Practice asking questions and making statements.
      – Speak in sentences of five or six words.

  – Oral Expression and Listening
    • Kindergarten:
      – Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups. (CCSS: SL.K.1)*
        » Follow agreed-upon rules for discussions (for example: listening to others and taking turns speaking about the topics and texts under discussion). (CCSS: SL.K.1a)
        » Continue a conversation through multiple exchanges. (CCSS: SL.K.1b)
      – Confirm understanding of a text read aloud or information presented orally or through other media by asking and answering questions about key details and requesting clarification if something is not understood. (CCSS: SL.K.2)*
      – Ask and answer questions in order to seek help, get information, or clarify something that is not understood. (CCSS: SL.K.3)*
      – Listen with comprehension to follow two-step directions. *
      – Use words and phrases acquired through conversations, reading and being read to, and responding to texts. (CCSS: L.K.6)*

  – Oral Expression and Listening
    • First Grade:
      – Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups. (CCSS: SL.1.1)
        » Follow agreed-upon rules for discussions (for example: listening to others with care, speaking one at a time about the topics and texts under discussion). (CCSS: SL.1.1a)
        » Build on others’ talk in conversations by responding to the comments of others through multiple exchanges. (CCSS: SL.1.1b)
        » Ask questions to clear up any confusion about the topics and texts under discussion. (CCSS: SL.1.1c)
      – Ask and answer questions about key details in a text read aloud or information presented orally or through other media. (CCSS: SL.1.2)
      – Ask and answer questions about what a speaker says in order to gather additional information or clarify something that is not understood. (CCSS: SL.1.3)
Oral Expression and Listening
• First Grade:
  – Describe people, places, things, and events with relevant details, expressing ideas and feelings clearly. (CCSS: SL.1.4)
  – Add drawings or other visual displays to descriptions when appropriate to clarify ideas, thoughts, and feelings. (CCSS: SL.1)
  – Produce complete sentences when appropriate to task and situation. (CCSS: SL.1.6)*
  – Give and follow simple two-step directions.

CO Language Impairment
(https://www.cde.state.co.us/cdesped/sli_guidelines)
• Adverse Effect on Education:
  • An adverse effect of a disability "prevents the student from receiving reasonable educational benefit from regular education."
    – Educational performance refers to the student’s ability to participate in the educational process, and must include consideration of the student’s social, emotional, academic, and vocational performance.

Examples of educational impact related to speech or language difficulties:
• Grammatical errors may create problems with a student’s orientation in time or impact written language products
• Syntactic errors may have an impact on a student’s oral or written expression
• Morphological errors may inhibit the student from using complete sentences or may interfere with the student’s ability to learn generative word parts, such as prefixes and suffixes
CO Language Impairment
(https://www.cde.state.co.us/cdesped/sli_guidelines)

• When interpreting assessment data as a student with a disability in the area of speech-language, it is recommended that 1.5 standard deviations (SD) below the population mean (approximately the 7th percentile, a Standard Score of 77 or below) be used as the threshold level for establishing the presence of a disability.

• This cutoff should be applied to composite scores of receptive and/or expressive measures, or to overall test scores, rather than individual subtests. Measurement error should be taken into account.

Other Disability Categories Commonly Associated with Language Impairment (CO)

- ASD
- Developmental Delay
- Hearing Impairment
- Intellectual Disability
- Specific Learning Disability
- TBI

Why Grammar?

• One area of language that is particularly difficult for many children to master is grammatical language.
  - Specific Language Impairment/Developmental Language Disorder
  - Down Syndrome; Fragile X syndrome
  - Autism Spectrum Disorder
Developmental Language Disorder

SLI, PLI, LLD, or DLD?
A debate on terminology in child language research programs.
Amanda Owen Van Horne, Susan Ebbels, Sean Redmond, & Liza Finestack
ASHA 2018
https://sites.udel.edu/chn-tellfor-clinicians/info-slides-links/
Specific Language Impairment (SLI)

**Advantages**
- Most common term in academic settings, though less widely used in clinical and educational practice in UK.

**Disadvantages**
- Too exclusive: ‘Specific’ often taken to mean that child:
  1. has a substantial discrepancy between language and nonverbal ability and
  2. has no other difficulties
     - this excludes many children from services
- Research on genetics and intervention does NOT support distinguishing children with and without verbal-nonverbal discrepancy

Primary Language Impairment

- Used by Boyle et al (2007) to refer to language difficulties that are not secondary to another condition, without requiring a discrepancy with nonverbal ability; otherwise, not commonly used (362 Google Scholar hits)

**Problems**
- People may think ‘primary’ refers to primary school-aged
- Not always easy to judge if a language problem is secondary to another problem
- Potential for confusion with ‘pragmatic language impairment’
Developmental Language Disorder

Advantages
• Descriptive, without implying anything about causes
• This term will be used in ICD-11 (and also more compatible with DSM-5 'language disorder')

Disadvantages
• Objections to ‘disorder’, too medical, disease focused; implies qualitative rather than quantitative differences between children
• May encourage old idea of ‘delay’ vs. ‘disorder’
• Affected children grow up: ‘developmental’ may be seen as inappropriate for teenagers/adults

Developmental Language Disorder

• Consensus Term

• DLD includes Specific Language Impairment

• SLI not equal to DLD: DLD includes those with IQ<85 and with other conditions (e.g., ADHD, dyslexia)

Developmental Language Disorder

Speech, language and communication needs - an overview:
Current Practice - 2018

Research Article
Lisbeth H. Finestack* and Kayla E. Bellerand*

Purpose: The aim of this study was to better understand current grammatical intervention approaches. Despite prenatally impaired language having a common weakness among children with language impairment, scanty data is known about current grammatical intervention practices. This study describes current intervention setting and dosage if resources were unlimited.

Results: We grouped participants based on the ages of children they served. The largest percentage of treatment services in early intervention and in preschool education occurred in ages 0-5.

23 Question online survey
Completed by 338 SLPs
- 114: Early Education
- 224: Elementary

Percent of Caseload with Expressive Grammatical Language Goals

<table>
<thead>
<tr>
<th>Ages</th>
<th>0-3</th>
<th>3-5</th>
<th>Elementary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ages 0-3</td>
<td>20%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Clinicians must identify, develop, and monitor progress of grammatical goals.

Today’s Agenda

- Introductions (10 min)
- Why Grammar? (30 min)
- Assessing Grammar (105 min) → 5:45
- Goal Writing (30 min)
- Intervention (105 min)
Assessing Use of Grammatical Forms

Purposes of Assessment

- Screening
- Diagnose
- Treatment
- Planning
- Monitoring
- Progress
- Functional
- Outcomes

Diagnosis

- Standardized, norm-referenced, assessments

Structured Photographic Expressive Language Test – 3 (Dawson, Stout, & Eyer, 2003)

- Ages 4 through 9-11
- Requires ~20 min to complete
- Includes 54 full color photographs of everyday situations and objects paired with simple verbal questions and statements
- Elicits specific morphological and syntactic structures
Sensitivity & Specificity

- Sensitivity = a/(a+c): reflects the ability of the measure to give a positive result when the child truly does have the disorder (+ on both measures)

- Specificity = d/(b+d): reflects the ability of the measure to give a negative result when the child truly does not have the disorder (- on both measures)
Sensitivity & Specificity

Want both scores to be as high as possible.
.90 is considered good .80 is considered fair

<table>
<thead>
<tr>
<th>Previous Dx</th>
<th>New Dx</th>
</tr>
</thead>
<tbody>
<tr>
<td>+</td>
<td>+ a b</td>
</tr>
<tr>
<td>-</td>
<td>- c d</td>
</tr>
</tbody>
</table>

Sensitivity & Specificity

• SPELT-3 has .90 sensitivity and 1.0 specificity with a 95 cutoff for 4-5 year old children with language impairment (Perona, Plante, & Vance, 2005).

• SPELT-P-2 has .91 sensitivity and 1.0 specificity with an 87 cutoff for 4-5 year old children with language impairment (Greenslade, Plante, and Vance, 2009).

SPELT-3 Forms

<table>
<thead>
<tr>
<th>Target</th>
<th>Test #’s</th>
<th>Target</th>
<th>Test #’s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prepositional phrase</td>
<td>1, 2, 3</td>
<td>Wh-clause</td>
<td>35</td>
</tr>
<tr>
<td>Plural</td>
<td>5, 6, 7</td>
<td>Participle</td>
<td>36, 37</td>
</tr>
<tr>
<td>Progressive -ing</td>
<td>8, 13, 17, 18, 19</td>
<td>Negative</td>
<td>38, 39, 49</td>
</tr>
<tr>
<td>Subject past tense</td>
<td>11, 16</td>
<td>Wh-question</td>
<td>42, 43, 44</td>
</tr>
<tr>
<td>Irregular -ed</td>
<td>14, 23</td>
<td>Wh-question</td>
<td>45, 46, 47</td>
</tr>
<tr>
<td>Past tense copula be</td>
<td>20, 21, 22</td>
<td>4th question</td>
<td>48, 49</td>
</tr>
<tr>
<td>Infinitive</td>
<td>24, 25, 26</td>
<td>Copula + complement</td>
<td>50</td>
</tr>
<tr>
<td>Conjunction “and”</td>
<td>27</td>
<td>Propositional clause</td>
<td>51</td>
</tr>
<tr>
<td>“Because”</td>
<td>28</td>
<td>Relative clause</td>
<td>52</td>
</tr>
<tr>
<td>Possessive ’s</td>
<td>29, 30</td>
<td>Embedded clause</td>
<td>53</td>
</tr>
<tr>
<td>Possessive pronoun</td>
<td>31, 32, 33, 34</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Rice Wexler Test of Early Grammatical Impairment (Rice & Wexler, 2001)

- https://cldp.ku.edu/rice-wexler-tegi

TEGI

- Ages 3 through 9-11
- Requires ~20 min to complete
- Three core probes:
  - Third Person Singular Probe
  - Past Tense Probe
  - Be/Do Probe

Sensitivity & Specificity

- Average .91 sensitivity (range = .86-.94) and .82 specificity (range = .80-.84) for 4 through 8 year olds
Diagnosis

- Many other comprehensive language assessments include grammar-focused receptive and expressive subtests
  - Preschool Language Scales (PLS; Zimmerman, Steiner, & Pond, 2002)
  - Comprehensive Evaluation of Language Fundamentals (CELF; Semel, Wig, & Secord, 2003)
  - Comprehensive Assessment of Spoken Language (CASL; Carrow-Woolfolk, 1999)

Assessing Use of Grammatical Forms

**Purposes of Assessment**

- Screening
- Diagnose
- Treatment Planning
- Monitoring Progress
- Functional Outcomes
Current Practice

- More than 80% of clinicians use standardized tests at least some of the time to monitor treatment progress.
  - Preschool Language Scales (PLS; Zimmerman, Steiner, & Pond, 2002)
  - Comprehensive Evaluation of Language Fundamentals (CELF;Semel, Wig, & Secord, 2003)
  - Structured Photographic Expressive Language Test (SPELT; Dawson, Stout, & Ever, 2003)
  - Comprehensive Assessment of Spoken Language (CASL; Carrow-Woolfolk, 1999)

- Clinicians indicated that they use language sampling to monitor progress approximately 75% of the time.
  - MLU
  - TTR
- Systematic Analysis of Language Transcripts (SALT; Miller & Chapman, 2012)
  - Bound Morpheme Table
  - Developmental Sentence Scoring (DSS; Lee, 1971)
Using Standardized Assessments to Monitor Progress

- **Advantage:** Efficiently identify grammatical weaknesses that may not occur in language samples
- **Disadvantage:** Each grammatical form is only assessed with a limited number of opportunities
Preschool Language Scale

- Expressive Communication

<table>
<thead>
<tr>
<th>Target</th>
<th>Test Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plural -s</td>
<td>01, a, b, c</td>
</tr>
<tr>
<td>Progressive -ing</td>
<td>04, a, b</td>
</tr>
<tr>
<td>Presentive -s</td>
<td>10, a, b</td>
</tr>
<tr>
<td>Regular past -ed</td>
<td>14, a, b</td>
</tr>
<tr>
<td>Irregular past tense</td>
<td>14, c, d</td>
</tr>
<tr>
<td>Irregular plural</td>
<td>17, a, b, c</td>
</tr>
</tbody>
</table>

Clinical Evaluation of Language Fundamentals

- Word Structure

<table>
<thead>
<tr>
<th>Target</th>
<th>Test Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regular plural -s</td>
<td>2, 3</td>
</tr>
<tr>
<td>Irregular plural</td>
<td>4, 5</td>
</tr>
<tr>
<td>Possessive</td>
<td>6, 7</td>
</tr>
<tr>
<td>Regular past -ed</td>
<td>8, 9</td>
</tr>
<tr>
<td>Irregular past tense</td>
<td>10, 11</td>
</tr>
<tr>
<td>Possessive plural</td>
<td>15, 16</td>
</tr>
</tbody>
</table>

Comprehensive Assessment of Spoken Language

- Syntax Construction

<table>
<thead>
<tr>
<th>Target</th>
<th>Test Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copula + complement</td>
<td>3, 4</td>
</tr>
<tr>
<td>Prepositional phrase</td>
<td>5, 6</td>
</tr>
<tr>
<td>Progressive -ing</td>
<td>8, 9</td>
</tr>
<tr>
<td>3rd person singular -s</td>
<td>10, 11</td>
</tr>
<tr>
<td>Participle</td>
<td>11, 12</td>
</tr>
<tr>
<td>Negative</td>
<td>13, 14</td>
</tr>
</tbody>
</table>
Structured Photographic Expressive Language Test

<table>
<thead>
<tr>
<th>Target</th>
<th>Test Item</th>
<th>Opportunities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st person singular</td>
<td>3, 4, 5, 6</td>
<td>6</td>
</tr>
<tr>
<td>3rd person singular</td>
<td>11, 12</td>
<td>7</td>
</tr>
<tr>
<td>Prepositional phrase</td>
<td>13, 14, 15</td>
<td>8</td>
</tr>
<tr>
<td>Wh-clause</td>
<td>16</td>
<td>9</td>
</tr>
<tr>
<td>Plural</td>
<td>17, 18, 19</td>
<td>10</td>
</tr>
<tr>
<td>Participle</td>
<td>20, 21</td>
<td>11</td>
</tr>
<tr>
<td>Progressive</td>
<td>22, 23</td>
<td>12</td>
</tr>
<tr>
<td>Negative</td>
<td>24, 25</td>
<td>13</td>
</tr>
<tr>
<td>3rd person singular</td>
<td>26, 27</td>
<td>14</td>
</tr>
<tr>
<td>Passive</td>
<td>28, 29</td>
<td>15</td>
</tr>
<tr>
<td>Future modal &quot;will&quot;</td>
<td>30, 31, 32</td>
<td>16</td>
</tr>
<tr>
<td>Reflexive pronoun</td>
<td>33, 34, 35</td>
<td>17</td>
</tr>
<tr>
<td>Regular past -ed</td>
<td>36, 37, 38</td>
<td>18</td>
</tr>
<tr>
<td>Irregular past -ed</td>
<td>39, 40, 41</td>
<td>19</td>
</tr>
<tr>
<td>Copula be</td>
<td>42</td>
<td>20</td>
</tr>
<tr>
<td>Auxiliary do/does</td>
<td>43, 44, 45</td>
<td>21</td>
</tr>
<tr>
<td>Auxiliary be</td>
<td>46, 47, 48</td>
<td>22</td>
</tr>
<tr>
<td>Infinitive</td>
<td>49</td>
<td>23</td>
</tr>
<tr>
<td>Conjunction &quot;and&quot;</td>
<td>50, 51</td>
<td>24</td>
</tr>
<tr>
<td>Propositional clause</td>
<td>52, 53</td>
<td>25</td>
</tr>
<tr>
<td>Possessive pronoun</td>
<td>54</td>
<td>26</td>
</tr>
<tr>
<td>Possessive</td>
<td>55, 56, 57</td>
<td>27</td>
</tr>
<tr>
<td>Embedded clause</td>
<td>58, 59</td>
<td>28</td>
</tr>
</tbody>
</table>

Test of Early Grammatical Impairment

<table>
<thead>
<tr>
<th>Target</th>
<th>Test Item</th>
<th>Opportunities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st person singular</td>
<td>50, 51</td>
<td>29</td>
</tr>
<tr>
<td>Regular past -ed</td>
<td>52, 53, 54</td>
<td>30</td>
</tr>
<tr>
<td>Irregular past -ed</td>
<td>55, 56, 57</td>
<td>31</td>
</tr>
<tr>
<td>Copula be</td>
<td>58</td>
<td>32</td>
</tr>
<tr>
<td>Auxiliary do/does</td>
<td>59, 60, 61</td>
<td>33</td>
</tr>
<tr>
<td>Auxiliary be</td>
<td>62, 63, 64</td>
<td>34</td>
</tr>
<tr>
<td>Infinitive</td>
<td>65</td>
<td>35</td>
</tr>
<tr>
<td>Conjunction &quot;and&quot;</td>
<td>66, 67</td>
<td>36</td>
</tr>
<tr>
<td>Possessive</td>
<td>68, 69</td>
<td>37</td>
</tr>
<tr>
<td>Embedded clause</td>
<td>70, 71</td>
<td>38</td>
</tr>
</tbody>
</table>

Using Standardized Assessments to Monitor Progress
What about using clinician-designed probes?

Let us help!

Designing Probes

- 10-12 probes for each target
- 1 demonstration and 2 practice items
- Standard and additional prompts
- Vocabulary
- Picture stimuli

Structured Photographic Expressive Language Test

<table>
<thead>
<tr>
<th>Target</th>
<th>Sub-Test 1</th>
<th>Sub-Test 2</th>
<th>Sub-Test 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prepositional</td>
<td>1, 2, 14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participle</td>
<td></td>
<td>1, 2, 3, 4</td>
<td></td>
</tr>
<tr>
<td>Progressive</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plural</td>
<td></td>
<td>5, 6, 7</td>
<td></td>
</tr>
<tr>
<td>Noun</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Possessive</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Possessive pron.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3rd person s</td>
<td></td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>Negative</td>
<td></td>
<td></td>
<td>38, 39, 49</td>
</tr>
<tr>
<td>Passive</td>
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Reflexive Pronoun Probes

- Potential targets: himself, herself, themselves
- Standard and additional prompts
  - “The boy looks in the mirror. Who does he see?”
  - “Start with He...”
- Structure analysis: Subject + Verb + target
- Think of 10-12 verbs/actions that are appropriate in this context!

Reflexive Pronoun Probes

- Demonstration
  - “Look at the picture. Who does the boy see?”
  - “He sees himself.”
Reflexive Pronoun Probes

- Practice 1
  - "Look at the picture. Who does the girl hug?"
  - "Start with She..."

- Practice 2
  - "Look at the picture. Who do the children cover?"
  - "Start with They..."

- Question 1
  - "Look at the picture. Who does the boy hurt?"
  - "Start with He..."
Past Tense Copula Be Probes

- Potential targets: was and were
- Standard and additional prompts
  - “Why did the girl go to bed?”
  - “She was tired.”
- Structure Analysis
  - Subject + target + complement
- Think of 10-12 adjectives!

Past Tense Copula Be Probes

- Example 1
  - “Why did the girl wear a sweater and a scarf?”
  - “She was cold.”

Past Tense Copula Be Probes

- Example 2
  - “Why did the children cry?”
  - “They were sad.”
Relative Clause Probes

• Example 1
  - “Look at the pictures. One boy reads a book, and the other plays video games. Who wears glasses?”
  - “The boy who plays video games.”

Relative Clause Probes

• Example 2
  - “Look at the pictures. One girl rides a bike, and the other rides a horse. Who wears a helmet?”
  - “The girl who rides a bike.”

More Probes

• Reflexive pronoun
• Past tense copula
• Relative clause
• Passive
• Negative wh-question
• Propositional clause
• 3s+infinitive
• Auxiliary+verb+infinitive

http://www.finestackclil.com/presentations/
Advantages to Using Probe?

• More opportunities of target
• Can use repeatedly (within reason)
• Quick to administer

Current Practice

• More than 80% of clinicians use standardized tests at least some of the time to monitor treatment progress.
  - Preschool Language Scales (PLS; Zimmerman, Steiner, & Pond, 2002)
  - Comprehensive Evaluation of Language Fundamentals (CELF; Semel, Wiig, & Secord, 2003)
  - Structured Photographic Expressive Language Test (SPELT; Dawson, Stout, & Eyer, 2003)
  - Comprehensive Assessment of Spoken Language (CASL; Carrow-Woolfolk, 1999).

Current Practice

• Clinicians indicated that they use language sampling to monitor progress approximately 75% of the time.
  - MLU
  - TTR
• Systematic Analysis of Language Transcripts (SALT; Miller & Chapman, 2012)
  - Bound Morpheme Table
  - Developmental Sentence Scoring (DSS; Lee, 1971)
**Language Sampling Benefits**

- Can assess how close to mastery, or if grammatical structures are emerging vs. absent
- Can select contexts/settings in which child is more successful with language
- Can be used to assess language outcomes.
  - Standardized tests are not designed for repeated testing intervals.
  - Language sample features can be administered repeatedly and normative comparisons can be made.

**Sample Length**

- Samples should range from 50-100 utterances
Expressive Language Sampling in Children with ASD

- Currently conducting a longitudinal study with children with ASD.
- Research Aim: Can we use language samples as an outcome measure in clinical trials for children with ASD?

ASD Study: Context

- Narrative
- Conversation
- Autism Diagnostic Observation Schedule-2 (ADOS)

Conversational Language Sample

<table>
<thead>
<tr>
<th>Idiosyncratic topic</th>
<th>After school</th>
<th>Teacher</th>
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<tbody>
<tr>
<td>School day</td>
<td>Playing games</td>
<td>TV show</td>
</tr>
<tr>
<td>Pets</td>
<td>Vacation</td>
<td>Hobbies/interests</td>
</tr>
</tbody>
</table>
Conversational Language Sample

- Idiosyncratic topic
  - I was talking to your Mom/Dad/Teacher and they told me that you... [TOPIC]
  - That sounds so interesting/like so much fun. Tell me about that.

Conversational Language Sample

- Idiosyncratic topic: follow-up
  - I'd like to hear more about...
    - [TOPIC]
    - what you like about [TOPIC]
    - why you like [TOPIC]
    - how you [TOPIC]
    - what happens when you [TOPIC]

Conversational Language Sample

- School Day
  - So, what grade are you in?
    - It's been a long time since I was in school so I really don't remember very much about the [participant's grade level].
  - Tell me what you did in school yesterday [or the last day the participant was in school].
    - Tell me everything you can remember.
Conversational Language Sample

- School Day: follow-up
  - What's your favorite part of school?
    - Tell me all about that.
    - Tell me why you like doing that.
  - What's the first thing you do when you get to school?
    - Tell me about what you do first
  - What's the last thing you do at school before you go home?
  - Is there anything you don't like about school?
    - Tell me why you don't like that.

Narrative Language Sample

 Narration from a story

Narrative Language Sample

 Narration from a story
Narrative Language Sample

• The goal of the clinician is to give as little input as possible
• 2 passes through the book
  – First pass: no talking just, look at pictures
  – Clinician always turns the pages

Narrative Language Sample

• 2nd pass: Child tells the story
  – 5-7 seconds per page (no matter what!)
• 1st page
  – How does the story start?
  – Hierarchy of prompts

Narrative Language Sample

• PROMPT A [If no response or IDK]
  – What's happening in this part of the story?

• PROMPT B [minimal response]
  – That's a good start. Tell me a little more about what's happening in this part of the story.
Narrative Language Sample

• PROMPT C [if no or minimal response to prompt A or B]
  - What about the boy? What's he doing?
  - What about the frog? What's he doing?
  - What about the turtle? What's he doing?
• Anything else? (use sparingly)
  - Okay, here's the next page.

ADOS Language Sample

• Narrative
• Conversation
• Expository Discourse
• Free Play
ADOS Conversation

- Throughout the ADOS session, examiner is looking for opportunities for conversion.
- Jump into topics as they come up by the child.
- Also provide opportunities with general questioning.
- Examiner "leads"
  - "I did something really cool yesterday..."
  - "Oh that reminds me of something funny..."

ADOS: Structured Conversation

- Description of a Picture:

- Interview: Relationships, school, emotions

ADOS: Play

- Make Believe Play
- Joint Interactive Play
ADOS: Play

- Free Play: younger children (does not yet use complex grammar, 5 years or younger)

ADOS: Expository

- Demonstration Task
  - "Pretend like I don't know how to brush my teeth, you are going to show and tell me how to do it."

Transcribe the Sample

- Systematic Analysis of Language Transcripts
  - [https://www.saltsoftware.com/](https://www.saltsoftware.com/)

**SALT**

- Software designed to improve the efficacy and accuracy of language sampling analysis.
- Once a language sample is transcribed, run it through SALT software to get a variety of language measures – MLU, TTR, NDW, mazes, bound morphemes table.

**SALT**

- Also, will compare your student’s performance to normative data.
- Database of over 2,000 children’s narrative and conversational language samples.

**Transcription Conventions**

- **Utterance Segmentation**
  - C-units: Independent clause and its modifiers

  C The frog was sitting on a lily pad.
  C And then it jumped in.
  C Now we can’t find my cat who always runs away.
  E That’s too bad!
Also, will compare your student's performance to normative data.

- Database of over 2,000 children's narrative and conversational language samples.
## Standard Measures

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<tr>
<td><strong>Total Time</strong></td>
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<td><strong>Time</strong></td>
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### Metrics

- **Number of Corrected Words**: 298
- **Number of Incorrect Words**: 29
- **Number of Sentences**: 13

### Verbal Facility and Rate

- **Sentence Rate**: 115.75
- **Corrected Sentence Rate**: 115.75
- **Corrected Word Rate**: 120.00
- **Corrected Sentence Rate**: 120.00

### Calculation Details

- **Number of Corrected Words**: 298
- **Number of Incorrect Words**: 29
- **Number of Sentences**: 13
- **Time Taken**: 18.29

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### Table: E-Learning Data

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Brown’s Stages (Paul & Norbury, 2013)

Developmental Sentence Scoring (Lee, 1971)

Developmental Sentence Analysis: A Grammatical Assessment Procedure for Speech and Language Clinicians
DSS Categories

- Indefinite Pronouns or Noun Modifiers
- Personal Pronouns
- Main Verbs
- Secondary Verbs
- Negatives
- Conjunctions
- Interrogative Reversals

DSS

- Each category has scores ranging from 1-8
- Each utterance with subject + verb scored
- Need at least 50 utterances; ideally, 100
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<td>C HE/*'S LOOK/ING IN THE MIRROR.</td>
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<td>C (UM) HIS DOG/'S SIT/ING ON THE CHAIR.</td>
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<td>C THE SHOE/S IS[EW:ARE] RIGHT THERE.</td>
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<td>C I SEE A MAN (THAT/'S HA*)&gt;</td>
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<td>C HE/'S HAPPY.</td>
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<td>C AND THE MOTHER/'S LIKE THIS.</td>
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<td>C AND THE TWO KID/S ARE LOOK/ING UP.</td>
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<td>C AND HE/'S STAND/ING.</td>
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<tr>
<td>C HE THE FROG JUMP) JUMP/3S RIGHT INTO THE SAXOPHONE WHEN THEY ORDER.</td>
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<td>C THE MAN TOOT/3S HIS (UM) SAXOPHONE.</td>
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</tbody>
</table>

Automated DSS

- CHILDES: [https://childes.talkbank.org/](https://childes.talkbank.org/)
- CLAN [https://talkbank.org/manuals/Clin-CLAN.pdf](https://talkbank.org/manuals/Clin-CLAN.pdf)
CONVERTING SALT FILES

Are you a SALT user? If we have won you over to the extent that you wish you could analyze OLD files using CHAT/CLAN, we can still help you. If you have a SALT file, the SALTIN command will run the file to CHAT and then, typically with few fixes, you can then run them the point at which you run MDK, POST, etc. to get EVAL or KIDEVAL output to compare. If you have totally unformatted text, the TEXTIN command takes files, no matter how messy (one sentence on a line, or whole paragraphs), and generates a rough CHAT manuscript that you can clean up and work with using the information in this guide.

This is what an output from KIDEVAL looks like:

This is a big display, so here is a flat guide to what you are looking at (we have actually hidden some columns you would get if ran the program, just to fit the most clinically useful stuff into the screen shot.)
Language Sampling Benefits

- Can use over and over!!
- Informs generalization

When should I use probes and when should I use language samples?

Assessing Use of Grammatical Forms

**Purposes of Assessment**

- Screening
- Diagnose
- Treatment Planning
- Monitoring Progress
- Functional Outcomes
Syntactic Assessment Guidelines (Balthazar & Scott, 2007)

- Combine detailed assessment of a student’s syntactic knowledge and performance when there are any signs that a student may have syntactic weaknesses.
- Use scores on norm-references tests of syntax as a starting point.
- Analyze test performance for known patterns associated with syntactic difficulties.
- Examine syntactic performance in written language as well as oral language.
- Review samples of student assignments and classroom assessments for functional problems related to syntax.
- Select appropriate criterion-references measures to thoroughly examine any problematic patterns and establish baseline performance.

Today’s Agenda

Introductions (10 min)

Why Grammar? (30 min)

Assessing Grammar (105 min)

Goal Writing (30 min) 7:45

Intervention (105 min)
Grammatical Goals

“The basic goal of all grammatical interventions should be to help the child to achieve greater facility in the comprehension and use of syntax and morphology in the service of conversation, narration, exposition, and other textual genres in both written and oral modalities” (Principle 1; Fey, Long, & Finestack, 2003).

Clinical Focus

Ten Principles of Grammar Facilitation for Children With Specific Language Impairments

Marc E. Fey
University of Kansas Medical Center, Kansas City
Steven H. Long
Marquette University, Milwaukee, WI
Lindeth H. Finestack
University of Kansas Medical Center, Kansas City

Although many children have significant difficulties in areas relating to syntax and morphology, this is not uncommon among children with specific language impairments. Hence, the intervention of grammar facilitation for children with specific language impairments has been developed in order to provide the necessary guidance for these children (Fey, 2003).
Grammatical Goals

“Grammatical form should NOT be the only aspect of language and communication that is targeted in a language intervention program” (Principle 2; Fey, Long, & Finestack, 2003).

Intermediate Goal

• To increase the child’s use of particular grammatical categories such as:
  - obligatory use of grammatical subjects
  - nominative case pronouns (e.g., he/she vs. him/her)
  - auxiliary forms (e.g., do/does; am/are/is)
  - subject-verb agreement (e.g., Leo walks home)
  - subject-verb agreement (e.g., Leo walks home)

Intermediate Goal

– Select intermediate goals in an effort to stimulate the child’s language acquisition processes rather than to teach specific language forms (Principle 3).
Specific Goals

- To increase the child's use of specific forms in specified contexts such as:
  - auxiliaries *is* and *are* or *do* and *does* in conversational language
  - pronouns *he* and *she* when retelling a story

Specific Goals

- The *specific goals of grammatical* intervention must be based on the child's “functional readiness” and need for the targeted forms (Principle 4).
Specific Goals

• AKA: Sort-term Goals, Behavioral Objective, Short-term Objectives (STO)

• Series of measurable steps for getting from here to there

Specific Goals

• 3 components (D-C-C)
  – “Do” statement
    • specifies action client is to perform
    – Yes – point, label, match, ask, name, identify, swallow, explain, produce,
    – No – learn, remember, comprehend, discover, know, understand
  – “Condition” statement
    • situation in which target behavior is to be performed
  – “Criterion” statement
    • how well target behavior must be performed

Do-Condition-Criterion?

• Judy will point to “yes” or “no” cards in response to simple clinician questions related to the immediate environment with 90% accuracy across three consecutive sessions.
Possible Grammatical Goal??

<table>
<thead>
<tr>
<th>Utterance</th>
<th>Positive</th>
<th>Negative</th>
<th>Indefinite</th>
<th>Personal Pronouns</th>
<th>Utterance Subject</th>
<th>Verb</th>
<th>Major Verbs</th>
<th>Secondary Verbs</th>
<th>Wh Questions</th>
<th>Sentence Point</th>
<th>Overall DSS</th>
</tr>
</thead>
<tbody>
<tr>
<td>(C) THIS BOY GET/3S DRESSED FOR DINNER.</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>1</td>
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<td>(C) DO/ING HIS TIE.</td>
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<td>(C) (UM) HIS DOG/'S SIT/ING ON THE CHAIR.</td>
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<td>(C) TURTLE IS SIT/ING ON THE FLOOR.</td>
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<td>(C) THE SHOE/S IS[EW:ARE] RIGHT THERE.</td>
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<tr>
<td>(C) *HE/'S GO/ING OUT TO DINNER.</td>
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<tr>
<td>(C) THE BOY/'S PET/ING HIS DOG.</td>
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<td>(C) THE TURTLE CRAWL/3S IN HIS SHELL.</td>
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<tr>
<td>(C) AND FROG JUMP/3S RIGHT INTO HIS POCKET.</td>
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<tr>
<td>(C) AND HE WAVE/3S GOODBYE.</td>
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<tr>
<td>(C) I SEE A MAN (THAT/'S HAT) &gt;</td>
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<td>(C) HE/'S HAPPY.</td>
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<td>(C) AND THE MOTHER/'S LIKE THIS.</td>
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<td>(C) AND THE TWO KID/S ARE LOOK/ING UP.</td>
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<td>(C) AND HE/'S STAND/ING.</td>
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<td>(C) THE MAN TOOT/3S HIS (UM) SAXOPHONE.</td>
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<td>(C) THE MOTHER/'S LIKE THIS.</td>
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<td>(C) THE MAN TOOT/3S HIS (UM) SAXOPHONE.</td>
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</table>

Overall DSS = 4.11
Possible Grammatical Goal??

When Selecting Language Goals, Consider…

- Absent and/or emerging (but not mastered!) targets
- Phonetic composition of the targets
- Developmental appropriateness of the targets
- Functionality of the targets
- Caregivers’ preferences
- Generalizability
- Addressing 2-3 semantic-syntactic relations at a time
Today’s Agenda

- Introductions (10 min)
- Why Grammar? (30 min)
- Assessing Grammar (105 min)
- Goal Writing (30 min)
- Intervention (105 min)

Treatment Approaches
Discrete Trial Practice

- Drill based approach
  - Clinician elicits imitation of linguistic form, provides corrective feedback or gives reinforcement
- Highly structured
- Often use:
  - Flashcards
  - Extrinsic reinforcement

Why do they work?
- LOTS of practice
- Clinician controls focus on the target behavior
- Criticism because it is unnatural, however, research shows improvements are made
  - Criticism greatest for generalization to functional settings

Imitation

- Clinician shows a visual stimulus (picture, story book, toys acting a situation, etc.)
- Clinician tells child to describe the stimulus a PARTICULAR way
  - Say......
  - Tell me....
- Child repeats clinician utterance
- Clinician controls opportunities
### Imitation

- **Modified imitation**
  - Clinician first creates opportunities using elicited production
  - If child’s response is incorrect, clinician provides additional opportunity using imitation

---

### Why does it work?

- Follows general principles of priming
- Can focus on target form without other difficult forms or semantic items interfering
- Provides lots of practice in short amount of time

---

### Focused Stimulation

- Child is exposed to multiple exemplars of a specific linguistic target (e.g., 10 models of each target per session)
- The child is never required to imitate models
- Focused vs. General Stimulation?
**Focused Stimulation**

- Must have deliberate manipulation of target to increase saliency of input
  - Multiple repetitions of targets
  - Increased stress by placing the form at the beginning or end of a phrase (may use to highlight a contrast)
  - Manipulate environment to create opportunities to produce target

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**Focused Stimulation** (Cleave & Fey, 1997)

<table>
<thead>
<tr>
<th>Target: ARE</th>
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<tbody>
<tr>
<td>Neil and Warren liked to play in the attic. It was fun up there, but it was a little scary, too. They always turned on the light so they could see. One day Neil and Warren started to go upstairs.</td>
</tr>
<tr>
<td>&quot;Where are you going?&quot; asked Dad.</td>
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<tr>
<td>&quot;Are you going to the attic?&quot;</td>
</tr>
<tr>
<td>&quot;Yes, we are!&quot; shouted Warren.</td>
</tr>
<tr>
<td>&quot;Neil and I are going up there now.&quot;</td>
</tr>
<tr>
<td>We are going to play up there.</td>
</tr>
<tr>
<td>&quot;Oh you are, are you?&quot; thought Dad.</td>
</tr>
</tbody>
</table>

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**Focused Stimulation**

- Variations:
  - Modeling only
  - Modeling with opportunities for the child to produce the target form
  - Modeling with recasts
Focused Stimulation

• Why does it work?
  – Numerous opportunities to hear the correct form
  – Models control for other difficult structures/words

Recasting

• Child produces an opportunity for the target
• Clinician responds by either
  – Correcting an error on the target
  – Creating a more complex utterance
• Child’s original meaning is maintained but FORM changes
• Child is indirectly in control of the opportunities

Recasting

• Why does it work?
  – Increased ability to focus on the target because:
    • Clinician and child produce the same meaning
    • Shared context
    • No change in topic
  – Easier generalization because recasting occurs in a more natural setting
Using Recasts…

- Variety:
  - Children learn better with more variability of verbs (24 different verbs better than 12) (Plante et al., 2014)
- Telegraphic:
  - Avoid telegraphic language; no advantage, only possible disadvantage (Bredin-Oja & Fey, 2014)

Table 5. Frequency ratings of intervention procedures, activities, and agents.

<table>
<thead>
<tr>
<th>Intervention component</th>
<th>Early education (n = 114)</th>
<th>Elementary (n = 224)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Never</td>
<td>Sometimes</td>
</tr>
<tr>
<td>Procedures</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recasts</td>
<td>0%</td>
<td>2%</td>
</tr>
<tr>
<td>Requests for imitation</td>
<td>0%</td>
<td>2%</td>
</tr>
<tr>
<td>Explicit presentations</td>
<td>4%</td>
<td>3%</td>
</tr>
<tr>
<td>Other</td>
<td>&lt;1%</td>
<td>&lt;1%</td>
</tr>
</tbody>
</table>
Treatment Approaches

- Discrete Trials
- Imitation
- Modeling/Focused Simulation
- Recasting

Clinician Directed
- Preselected targets
- Manipulation of input

Child Directed
- Natural context
- Following the immediate interest of the child

Hybrid Approach

Blending
- Modeling + elicited imitation + recast
  - Adult: I’m bouncing the ball. It bounces up and down. You try it. Can you make it bounce?
  - Child: Bounce, bounce.
  - Adult: Tell Lisa what you’re doing.
  - Child: Bounce ball.
  - Adult: You are bouncing the ball.
Principles to Consider

- Saliency
- Highlighting Correct Form
- Context
- Modality

Increasing Saliency

- Acoustic characteristics
  - Longer (decreased speech rate)
    - Studies with 3 speaking rates
      - 2.8 syllables per second
      - 4.4 syllables per second
      - 5.9 syllables per second
    - Louder (focus increased loudness on target)
    - More pitch changes

Increasing Saliency

- Position of the target
  - Move target to the end of utterance rather than in medial position

The big man is my brother.

Who is your brother? The big man is.
Increasing Saliency

• Contrast target form with related forms
  – Use acoustic or position saliency
    • The kangaroo hops.
    • The kangaroos hop.
  • The cat is inside
  • The dog is outside

Why does it work?
  – Focuses attention on the target form
  – Decreases cognitive load for attending to the target form

Principles to Consider

<table>
<thead>
<tr>
<th>Saliency</th>
<th>Highlighting Correct Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Context</td>
<td>Modality</td>
</tr>
</tbody>
</table>
Highlight the Correct Form

• Compare correct form to the child’s form
  – Clinician produces an intentional error
  – Create opportunities to hear the adult and child form in close proximity
    • As in recasting
    – Discrete trials
      • Child detects errors / corrects errors
      • Child underlines correct forms

Highlight the Correct Form

• Why does it work?
  – Focuses attention not only on the target form but the error the child makes
  – If used in context (recasting) can highlight the meaning/functional difference between the correct and incorrect forms

Principles to Consider

<table>
<thead>
<tr>
<th>Saliency</th>
<th>Highlighting Correct Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Context</td>
<td>Modality</td>
</tr>
</tbody>
</table>
Choose Appropriate Context

• Types of contexts
  – Sentence/phrase level
    • Most unnatural
  – Conversation-based
    • Play, natural discourse
  – Literature-based
    • Use age/classroom relevant literature to develop themes

Choose Appropriate Context

• Why does it matter?
  – "Face" validity of natural contexts suggests increased generalization to functional settings
  – Target behaviors might occur in different frequencies in different contexts
    • Past tense more likely in narratives
    • Present tense more likely in expository contexts

Principles to Consider

- Saliency
- Highlighting
- Correct Form
- Context
- Modality
Choose an Appropriate Modality

- Types of modalities
  - Auditory
  - Written
- Why does it matter?
  - Auditory - typical acquisition
  - Written
  - Older children may show written deficits
  - Some targets may occur in writing but are rare in spoken language

Also Consider…

- Input based on level of explicitness
Continuum of Explicitness…

Implicit → Explicit

Feedback: “Oops that isn’t right”

Feedback: “No, that isn’t right because you forgot…”

Evidence Supporting Rule Presentation

Finestack & Fey, 2009
32 6-9 year-olds with DLD, 5 sessions; 1 novel form
Implicit: 19% “Pattern-Users”, Explicit: 63% “Pattern-Users”

Finestack, 2018
25 5-8 year-olds with DLD, 5 sessions per form; 3 novel forms
Implicit: 23% “Pattern-Users”, Explicit: 83% “Pattern-Users”

Finestack, In Preparation
35 9-12 year-olds with ASD, 6-17 20-min sessions; 1 true form
All participants learned target form

Dosage

- Dosage (how much treatment you are providing)
- Can be measured as:
  - Number of sessions
  - Length, in time, of sessions
  - # of opportunities per session
- No set guidelines
  - “Think outside the box”
### Dosage - current

#### Early Education
- 21 teaching opportunities per session
- 21 to 40 min in length
- 3-4 sessions per month

#### Elementary
- 11–20 teaching opportunities per session
- 21 to 40 min in length
- 3-4 sessions per month

### Dosage - ideal

#### Early Education
- 39 teaching opportunities per session
- Increase by 24 min = 45 to 64 min in length
- Increase by 4 sessions = 7-8 sessions per month

#### Elementary
- 41 teaching opportunities per session
- Increase by 16 min = 37 to 56 min in length
- Increase by 4 sessions = 7-8 sessions per month
How can I do ALL of this??

One Idea

Grammatical Targets

• Cyclical approach to teaching true grammatical forms
  – 3rd person singular –s
  – Past tense –ed
  – Auxiliary is/are in statements
  – Auxiliary do/does in questions
**Cyclical Approach**

<table>
<thead>
<tr>
<th>Sessions</th>
<th>Target</th>
<th>Cycle</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-4</td>
<td>3rd -a</td>
<td>Cycle 1</td>
</tr>
<tr>
<td>5-8</td>
<td>Past -ed</td>
<td>Cycle 1</td>
</tr>
<tr>
<td>9-12</td>
<td>Aux is/are</td>
<td></td>
</tr>
<tr>
<td>13-16</td>
<td>Q do/does</td>
<td></td>
</tr>
<tr>
<td>17-20</td>
<td>3rd -a</td>
<td>Cycle 2</td>
</tr>
<tr>
<td>21-24</td>
<td>Past -ed</td>
<td></td>
</tr>
<tr>
<td>25-28</td>
<td>Aux is/are</td>
<td></td>
</tr>
<tr>
<td>29-32</td>
<td>Q do/does</td>
<td></td>
</tr>
</tbody>
</table>

**Each 30-min session**

- Sentence Imitation
- Model Story 1
- Post-story Production 1
- Model Story 2
- Post-story Production 2
- Auditory Bombardment

**Hybrid Approach**

- Modeling
- Imitation
- Recasting
The Stimuli

- High verb variability: 24 different verbs used in each session (Plante et al., 2014)
- Begin with “hard” verbs (Owen Van Horne et al., 2017)
  - Highly atelic (i.e., without a clear end point),
  - Rarely inflected with 3rd person singular/past tense
  - Frequently heard in the bare stem form
  - End in obstruent and alveolar consonants.

“Hard” Verbs

- Owen Van Horne & Green Fager, 2015
Easy to Hard

12. Kiss 27. Dance 42. Squash 57. Fish
15. Help 30. Sniff 45. Stroll 60. Exercise

Rules

<table>
<thead>
<tr>
<th>Target</th>
<th>Example Explicit Presentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>3rd Person -</td>
<td>When you talk about what one person or thing does, you add an /s/ sound to the end of the action word. Listen, ‘He walks to the store.’ When you talk about what more than one person or thing does, you don’t add anything to the end of the action word. Listen, ‘They walk to the store.’</td>
</tr>
<tr>
<td>Past Tense - ed</td>
<td>When you talk about something that already happened, you added a /t/ sound or a /d/ sound to the end of the action word. Listen, ‘He jumped.’ ‘They paddled.’</td>
</tr>
<tr>
<td>Aux is/are Statements -</td>
<td>When you talk about what one person or thing is doing you use ‘is’ and add /ng/ to the action word. Listen, ‘She is walking.’ When you talk about what more than one person or thing is doing, you use ‘are’ and add /ng/ to the action word. Listen, ‘They are walking to the store.’</td>
</tr>
<tr>
<td>Aux do/does Questions</td>
<td>When you ask a question about one person or thing, begin with ‘does.’ Listen, ‘Does he want more?’ When you ask about more than one person or thing begin with ‘do.’ Listen, ‘Do they want more?’</td>
</tr>
</tbody>
</table>

Each 30-min session

Sentence Imitation

Model Story 1
Post-story Production 1

Model Story 2
Post-story Production 2

Auditory Bombardment
Sentence Imitation: 5 min

- Drill activity
- Participants imitate 7 contrastive sentence pairs
- Pairs will vary in the syntactic platform so target is in medial or final position

Example Sentence Imitation Items

<table>
<thead>
<tr>
<th>Target</th>
<th>Sample Presentation Platforms</th>
</tr>
</thead>
<tbody>
<tr>
<td>3rd Person singular</td>
<td>The kangaroo hops. The kangaroos hop. The toy works with batteries. The new toys work with batteries.</td>
</tr>
<tr>
<td>Past tense-ed</td>
<td>The cat stretched. The cat will stretch. He baked a pie. He will bake a pie.</td>
</tr>
<tr>
<td>Aux be/are statements</td>
<td>The dogs are growling. The dog is growling. They are turning the crank. He is turning the crank.</td>
</tr>
<tr>
<td>Aux do/does questions</td>
<td>Does he exercise? Do they exercise? Does he rake the leaves? Do they rake the leaves?</td>
</tr>
</tbody>
</table>

Sentence Imitation: 5 min

- **Child Correct:** Clinician provides positive feedback and hear the sentence again (e.g., “That was right. The kangaroo hops”).
- **Child Not Correct:** Clinician provides corrective feedback, repeats the sentence, and asks the participant to try again (e.g., “That wasn’t what I said. Listen. The kangaroo hops. Try it again.”).
Sentence Imitation: 5 min

- Clinician also provides the child with the rule (e.g., “That was right. When you talk about what one animal does, you add an /s/ sound to the end of the action word. Listen, ‘The kangaroo hops.’”).

**Dosage:** 7 unique verbs; at least 28 models or recasts of target; 14 rule presentations.

Each 30-min session

- Sentence Imitation
- Model Story 1
- Post-story Production 1
- Model Story 2
- Post-story Production 2
- Auditory Bombardment

Model Story: 4 min

- Clinician models model target forms using a naturalistic story-sharing focused stimulation approach.
- Each short story contains at least 5 unique verbs following the Owen Van Horne “Hard to Easy” verbs assigned to the session.
Clinician uses toys to model elements of the story and to help maintain the participant’s attention during the story presentation.

Only demand placed on the child is to pay attention to the story as best as possible.

**Dosage/story:** 5 unique verbs; at least 5 models of target

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**Model Story**

**Research Article**

*Do the Hard Things First: A Randomized Controlled Trial Testing the Effects of Exemplar Selection on Generalization Following Therapy for Grammatical Morphology*

Amanda Jean Owen Van Horn, “Mercy Frey,” and Maura Curren*

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**Sample Story**

**The Bake Shop**

Verbs: Bake, Work

On Monday, A baked cookies. “I love rolling the dough,” said A.

On Tuesday, B worked on cleaning display cases. “Everything looks shiny,” said B.

On Wednesday, A baked cookies. “I think cookies are yummy,” said A.

On Thursday, B worked at the display window. “I want more cookies,” said B.

On Friday, they both took a break. “We worked hard all week; it’s time to rest,” said B.

What would you like to do in a bakery?
Each 30-min session

Sentence Imitation
Model Story 1
Post-story Production 1
Model Story 2
Post-story Production 2
Auditory Bombardment

Post-story Production: 5-7 min

• Clinician creates at least five opportunities for child to produce the target form using a play format.
• Prompt child to attempt to produce the target form using one of the “Easy/Hard” verbs:
  – Directly related to the story (e.g., “What does the kangaroo do to get attention?”)
  – Related to the play toys (e.g., “Look at the kangaroo. What does he do?”)
  – Related to another area of interest directed by the child.

Post-story Production: 5-7 min

• Clinician provides a recast after each target production or attempt.
• Clinician also provides the child with the rule (e.g., “That was right. When you talk about what one animal does, you add an /s/ sound to the end of the action word. Listen, ‘the boy works.’”).

➢ **Dosage:** at least 10 models or recasts of target; 5 rule presentations
Each 30-min session

Sentence Imitation
  Model Story 1
  Post-story Production 1
  Model Story 2
  Post-story Production 2
  Auditory Bombardment

Auditory Bombardment: 3 min

- Clinician present child with sentence pairs containing the target and a contrast (similar to those in Sentence Imitation activity).
- Child prompted to listen carefully; no other demands will be placed on the child.

- Clinician also presents the guiding rule at the beginning of the activity and after the second and fifth sentence set.

- **Dosage:** 7 unique verbs; at least 14 models of target or contrast; 3 rule presentations
Dosage per Session

• 24 unique verbs
• At least 72 models or recasts per session
• 27 rule presentations

• **Note:** Can fade the rule prompts across sessions as child gains mastery.

Clinical Trial

Figure 2. Flowchart of intervention phases, randomization, and sequencing.

THANK YOU!!

Questions?

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Key References


